



Nutritional Approach to Oncogeriatrics in Adult Patients Over 80 Years of Age

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Abstract

In cancer patients, nutrition plays a very important role, since patients have a high risk of malnutrition due to the effects of the tumor and the treatments administered. Nutritional intervention in the cancer patient should be early and be part of the treatment, in order to reduce the complications of the treatments that are applied in the different stages of the cancer disease. The objective of this article is to review the nutritional requirements for older adults in long-term care with cancer and an adequate nutritional intervention as a therapeutic tool.

Methods: A systematic review was carried out in PubMed and Medline of articles published on oncogeriatrics and nutritional interventions up to the year 2021.

Results: The data analyzed show the importance of a nutritional intervention in these patients.

Conclusion: Nutritional assessment and intervention in cancer patients is intended to improve quality of life and prevent early death.

Keywords: Nutrition; Cancer; Intervention; Geriatric oncology

Introduction

Cancer is considered a health problem of great proportion due to its incidence and mortality, as published by the international agency for cancer research [1], through the GLOBOCAN 2018 project [2], cancer caused in 2018 more of 9.5 million deaths worldwide, of which about 70% occur in low- and middle-income countries. The economic impact of this disease is substantial and has been increasing since the last report issued by the WHO [3]. In Cuba, cancer was the second cause of death since 1958. Data from the national cancer registry show that the incidence and mortality from this cause have increased since 1990. In the period 2001-2003, an average of 23,710 new cases was diagnosed per year excluding non-melanoma skin cancer [4]. The statistical yearbook for 2010 reports a global incidence of 31,618 new cases and mortality equal to 25,994 cases in 2007 [5].

The comprehensive geriatric assessment (VGI) is a multidimensional evaluation that discovers the deficits of the older adult patient. The VGI includes the analysis of functional status, comorbidity, cognition, psychological status, social status, nutritional status, medications and geriatric syndromes in the elderly (Figure 1).

In older adults with cancer, VGI detects reversible factors that manage to interfere with treatment (poor social support, malnutrition, reversible comorbidity); helps estimate the risk of mortality (depending on functional status, degree of comorbidity) and estimates tolerance to chemotherapy, which is worse in patients with functional dependence, comorbidity and/or malnutrition. Therefore, the VGI is a more specific, complete and appropriate tool for the assessment, detection and decision-making of health in older adults [6].

Nutritional requirements

Effective nutritional management of cancer patients depends on an estimate of Total Energy Expenditure (TEE), which is the sum of Resting Energy Expenditure (REE) plus energy expenditure associated with physical activity. The use of standard formulas for the calculation of energy requirements may be inaccurate given the altered energy metabolism and metabolic differences in patients with different types of cancer [7,8].

Resting Energy Expenditure (REE) may be elevated in patients with advanced stages of cancer,

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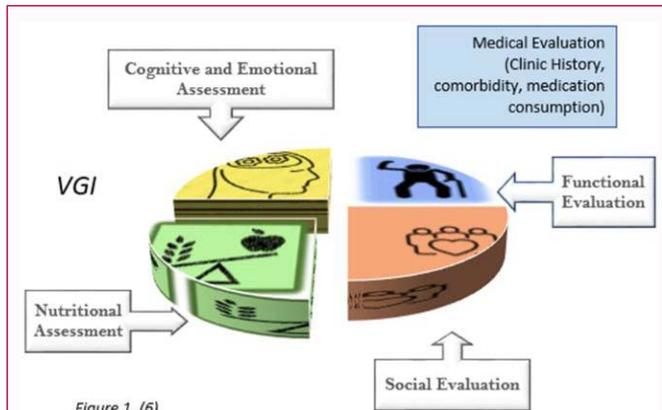


Figure 1. (6)

Figure 1: Comprehensive geriatric assessment (VGI) is a multidimensional evaluation.

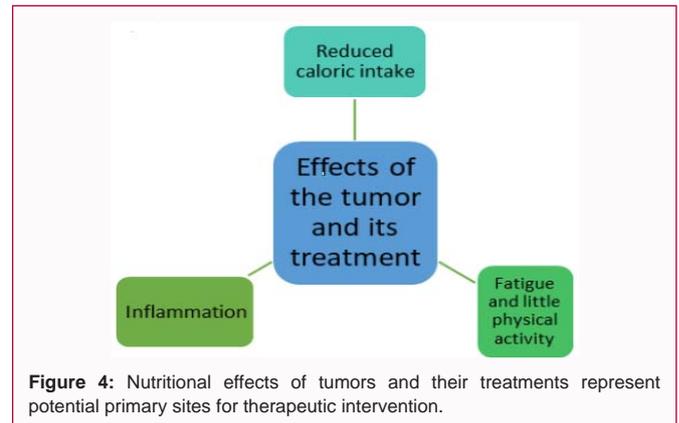


Figure 4: Nutritional effects of tumors and their treatments represent potential primary sites for therapeutic intervention.

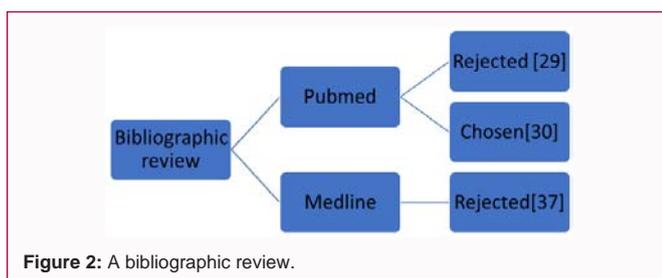


Figure 2: A bibliographic review.

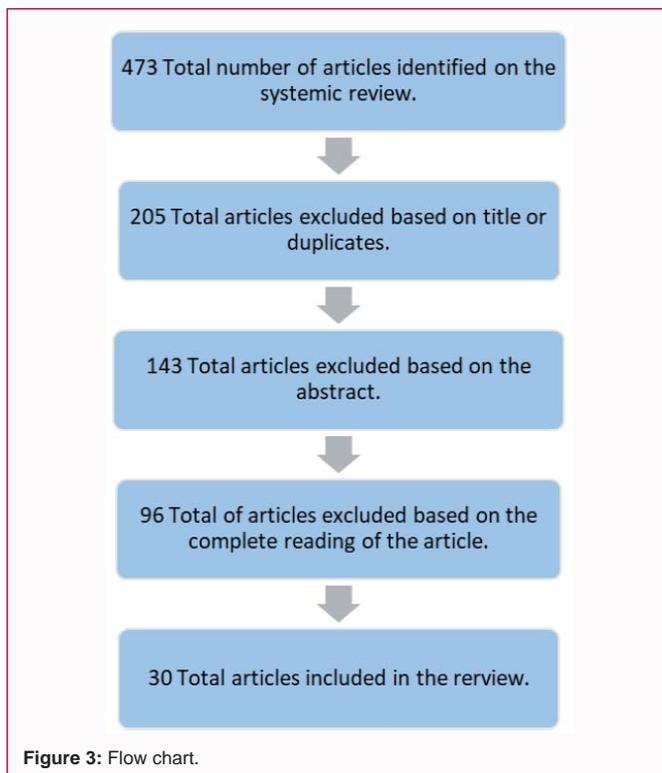


Figure 3: Flow chart.

but they may also have increased fatigue and decreased physical activity, limiting Total Energy Expenditure (TEE) [9].

Indirect Calorimetry may be the most accurate study to predict a patient's REE and may be considered for all cancer patients [8]. If REE or GET cannot be measured directly, 25 kcal/kg/day to 30 kcal/kg/day with 1.2 g protein/kg/day to 1.5 g protein/kg/day serves as

an objective measure to maintain or restore lean body mass; it has been proposed that higher protein ranges may be necessary when depletion is considerable [10-12]. However, in severely depleted patients, feedings should be started slowly and over several days (while carefully monitoring phosphate and electrolytes) to avoid potentially damaging refeeding syndrome [13].

Water and sodium requirements in cancer patients, which should be kept below normal (30 ml/kg/day for water and 1 mmol/kg/day for sodium) in the case of peritoneal carcinomatosis, if obstruction appears or ascites will prevent overloading of the third space [6].

Material and Methods

A bibliographic review was carried out, which included the terms; nutrition, older adults, cancer, intervention, palliative care in the PubMed and Medline databases, which included articles published until 2021 in Spanish and English. The main exclusion criterion was that the articles did not include information regarding the VGI and nutritional interventions in the elderly with cancer, in addition to exceeding 10 years from its completion (Figure 2).

Due to the disproportion of articles found based on keywords, the relevance of the studies was evaluated with a hierarchical approach based on the title, the abstract and the full article. Many of the articles that appeared were not consistent with the objective of the systemic review. The following flow chart details the selection process (Figure 3).

Results

Intervention, advice and nutritional support

Nutritional counseling is the basis of intervention and the most widely used for the treatment of malnourished patients with cancer and a functional gastrointestinal tract [14].

A nutritionist can provide individualized advice whose goal will be the energy and nutrient balance based on the estimated REE, lifestyle, stage of the disease, and both the intake and food choices of the patient. Counseling should address the presence and severity of symptoms such as anorexia, nausea, dysphagia, abdominal cramps or edema, diarrhea and constipation.

The critical components of nutritional counseling are: (1) Conveying to the patient the reasons and goals for nutritional recommendations, and (2) Motivating the patient to adapt to the altered nutritional demand of their disease. Nutritional advice and nutritional support [6].

Table 1: There are several specific orexigenic drugs to treat anorexia in cancer patients.

Anabolic Steroids	Progestogen	Corticosteroids	Intestinal motility stimulants	Vitamin	Cannabinoid	Antidepressant and antipsychotics	Others
Deca-Durabolin 100 mg.	Megestrol acetate: 160 mg/day -1600 mg/day	Dexamethasone 2 mg/day - 8 mg/day for 1 week Methylprednisolone 16 mg/day - 40 mg/day	Metoclopramide 30 mg - 120 mg in 24 hours continuous infusion	Zinc 50 mg -180 mg. Per day for 1-2 weeks. complex B 5 mg - 40 mg. For day	Dronabinol 5 mg -7.5 mg/day 1 hour after meals	Mirtazapinal 5 mg/day - 30 mg/day Olanzapine 5 mg/day	Melatonin 20 mg at night Thalidomide 5 mg - 200 mg Pentoxifylline 400 mg 3 times per week

Table 2: Different publications that show that the VGI data lead to a modification of the initial therapeutic approach.

Study	N	Type of tumor	% of changes in the decision	Type of modification
Extermann. [22]	n=15 (analysis in 11 cases) (+70 years) Age Md 79a (72-87a)	breast Ca	36% (4/11)	1 cases: it was scheduled Qt 2 cases: it was scheduled Ht 1 case: included in trial
Girre. [23]	n=105 (analysis in 93 cases) (+70 years) Age Md 79 years (70-97a)	All types of tumor, solid or hematological (61% Ca breast; 6,7% Ca colon)	38.7% (36/93)	32 of the changes were in relation to Qt
Chaibi. [24]	n=161 (>70 years) Age Md82, 4 years (73-97a)	Solid tumors (33% colon Ca; 19% breast Ca; 17% other tumors G-1)	49% (79/161)	Dose intensity was increased in 45 cases Dose intensity was reduced in 34 cases
Horgan. [25]	n=30 (>70 years) Age Md 78 years (70-88a)	Solid tumors (lung Ca or gastrointestinal tumors)	20% (6/39)	More intense treatment is given in 3% of cases (1/30); a less aggressive treatment is administered in 5 cases (17%)
Calliet. [26]	n=375 (>70 years) Age Md 80 years (70-99a)	All types of tumor	21% (78/375)	A more intense treatment is administered in 8 cases (2%), was delayed in another 7 cases (2%) and a less intense treatment was planned in 63 (17%)
Aliamus. [27]	n=47 (>70 years) Age Md 79 years (70-91a)	Lung cancer	45% (22/47)	

Md: Median; Qt: Chemotherapy; a: Years; Ht: Hormonotherapy; Ca: Cancer; GI: Gastrointestinal

Oral nutrition support should include Oral Nutritional Supplements (ONS) or fortified foods at meals and snacks to fill nutritional gaps when patients are at nutritional risk; some studies evaluating nutritional counseling with and without the use of ONS have shown improvements in nutritional outcomes when including ONS: Weight gain, BMI increase, and improved scores on a validated nutritional assessment test [15].

Anti-catabolic and anti-inflammatory nutritional options

In cancer patients, systemic inflammation inhibits nutrient utilization and promotes catabolism, leading to muscle breakdown. Calorie and protein fortification of common foods, even with standard ONS, has not been shown to reduce systemic inflammation. Updated nutritional interventions suggest considering nutrition with anti-catabolic and inflammation-suppressing ingredients [16]. Studies have indicated that ONS with the addition of Essential Amino Acids (EAAs) or high-dose leucine can improve muscle protein synthesis even in inflammation, although results have not been completely conclusive [17,18].

Fish oil, a source of long-chain omega-3 fatty acids, currently helps improve appetite, oral intake, lean body mass, and body weight in patients with advanced cancer or at risk of malnutrition [11]. The mechanism of omega-3 fatty acids to regulate and decrease systemic inflammation related to cancer cachexia is still under investigation. One of the side effects of fish oil in a randomized study in patients with advanced colorectal cancer who received 2 g of fish oil daily for the first 9 weeks of chemotherapy showed that the time to tumor progression was significantly longer for these patients [19].

Appetite-stimulating drugs: orexigenos

Appetite-stimulating medications and treatments are those that contribute to improving multiple symptoms, and as a general rule they will be administered as a trial for a period of 10 to 14 days, stopping if no positive effects are obtained within that period [20]. There are several specific orexigenic drugs to treat anorexia in cancer patients. All have some utility (Table 1).

But none modifies cancer; an example: Metoclopramide in continuous infusion at doses of 30 mg/24 h to 120 mg/24 h in 19 patients achieved an improvement of 85%, with an increase in daily calorie intake, which indicates the possibility that gastroparesis is the reason for the anorexia or chronic nausea in advanced cancer shown in recent studies [20].

Multimodal therapy: Putting it all together

Body reserves in cancer patients are compromised by a complex and variable pattern of physical and functional alterations. Therefore, nutritional therapy alone could be clinically ineffective if other current needs are not addressed. Nutritional intervention should be part of a more comprehensive care, including psychological counseling, optimal pain control, among others. Fearon et al. introduced the concept of multimodal therapy for optimal care in cancer patients. Adverse nutritional effects of tumors and their treatments represent potential primary sites for therapeutic intervention: (1) Increase and optimize nutritional intake, limit systemic inflammation, and engage in physical activities and exercise (Figure 4) [21].

It is expected that nutrition programs will need to merge with metabolic concepts, exercise programs, and other approaches. As multimodal strategies progress, the interactions and individual effects of each modality are expected to improve the treatment of the cancer patient [11].

Discussion

VGI is essential to optimize care for the elderly with cancer, it still leaves many open questions and more research is needed in this regard. Table 2 [22-27] shows different publications that show that the VGI data lead to a modification of the initial therapeutic approach proposed by the specialist, and therefore, provide more information than the traditional evaluation.

Like the International Society of Geriatric Oncology, it is recommended that all elderly patients with cancer undergo a VGI [6].

Although VGI is widely used in oncogeriatrics, there is no

uniform model, because the domains analyzed in each series are different, as are the scales and questionnaires used to assess each domain. Therefore, there is no unanimity regarding the VGI model that should be used [28].

In the strategies for nutritional care in cancer, they help doctors to have a better approach and care for cancer patients, medical nutritional care strategies were updated, including recommendations for energy, proteins, use of immunomodulators and specialized nutrients to reduce the inflammatory and catabolic effects [29].

Strategies for updating nutritional care in cancer: Assessment of the nutritional status of cancer patients at the start of treatment. Evaluate the signs or symptoms of anorexia, cachexia and sarcopenia mainly. Accurately measure muscle mass using sensitive imaging technologies (computed tomography) for early detection of malnutrition and sarcopenia. Use specific biomarkers such as CRP and albumin to assess the severity of cancer-related systemic inflammation. Use indirect calorimetry to estimate Resting Energy Expenditure (REE) whose objective will be to individualize energy and protein needs. Harnessing nutrition and metabolic support as a vital part of cancer care, as well as reducing inflammation and restoring lean body mass. Assess physical function routinely to monitor and guide physical rehabilitation [30].

This review makes it clear that nutritional assessment and intervention in older adults with cancer improves quality of life. And key points have been selected and prioritized to improve the nutritional care of the elderly in the different phases of the oncological process.

Conclusion

The importance of a nutritional intervention, as well as an adequate nutritional assessment in cancer patients, has the purpose of improving the quality of life and avoiding early death. Multidisciplinary management is essential, as well as individualizing each patient, respecting the principles of autonomy, beneficence, non-maleficence, and justice in the face of nutritional intervention.

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